

6 a polymer gel electrolyte, said polymer gel electrolyte comprising a
7 polymer,

8 wherein:

9 said negative electrode comprises a plurality of composite particles,

10 each of said composite particles comprises: a central portion consisting
11 essentially of at least one element selected from the group consisting of tin, silicon,
12 and zinc; and a coating at least partially around said central portion,

13 said coating comprises a solid solution or an inter-metallic compound, and

14 said solid solution or inter-metallic compound comprises: a) at least one
15 element selected from the group consisting of tin, silicon, and zinc, and b) at least
16 one additional element, said additional element selected from the group consisting
17 of group 2 elements, transition elements, group 12 elements, group 13 elements
18 and group 14 elements exclusive of carbon, and exclusive of said at least one
19 element selected from the group consisting of tin, silicon, and zinc in said solid
20 solution or inter-metallic compound.

1 2. (Once Amended) The non-aqueous electrolyte secondary battery of
2 claim 1, wherein said positive electrode comprises a lithium-containing composite
3 oxide and said polymer, and said negative electrode comprises said composite
4 particles and said polymer.

1 3. (Once Amended) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said polymer is a polyalkylene oxide.

1 4. (Twice Amended) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said polymer is a polymer or a copolymer comprising
3 at least one monomer selected from the group consisting of acrylonitrile,
4 vinylidene fluoride, hexafluoro-propylene, tetrafluoro-ethylene, and perfluoro-
5 alkyl vinyl ether.

1 5. (Twice Amended) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said polymer is a polyester.

1 6. (Once Amended) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said polymer is a copolymer of a methacrylate and an
3 ethylene oxide.

1 7. (Once Amended) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said polymer gel electrolyte comprises at least one
3 structural reinforcement selected from the group consisting of hydrophobic treated
4 particulates, fiber fabrics of polyolefin polymers, and non-woven fabrics of
5 polyolefin polymers.

1 8. (Twice Amended) A non-aqueous electrolyte secondary battery
2 comprising:

3 a positive electrode,

4 a negative electrode capable of intercalating and de-intercalating lithium,

5 a non-aqueous electrolyte solution, and

6 a lithium ion conductive glass solid electrolyte,

7 wherein:

8 said negative electrode comprises a plurality of composite particles,

9 each of said composite particles comprises: a central portion consisting
10 essentially of at least one element selected from the group consisting of tin, silicon,
11 and zinc; and a coating at least partially around said central portion,

12 said coating comprises at least one of a solid solution and an inter-metallic
13 compound, and

14 said solid solution or inter-metallic compound comprises: a) at least one
15 element selected from the group consisting of tin, silicon, and zinc, and b) at least
16 one additional element, said additional element selected from the group consisting
17 of group 2 elements, transition elements, group 12 elements, group 13 elements
18 and group 14 elements exclusive of carbon, and exclusive of said at least one
19 element selected from the group consisting of tin, silicon, and zinc in said solid

20 solution or inter-metallic compound.

1 9. (Once Amended) The non-aqueous electrolyte secondary battery of
2 claim 8, wherein said lithium ion conductive glass solid electrolyte is synthesized
3 from:

4 a first component comprising a lithium sulfide;

5 a second component comprising a silicon sulfide, a phosphor sulfide or a
6 boron sulfide; and

7 a third component comprising lithium phosphate, lithium sulfate, lithium
8 borate, or lithium silicate.

(Please add the following new claims:)

1 10. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said at least one element selected from the group
3 consisting of tin, silicon, and zinc in said central portion is tin, and said at least one
4 element selected from the group consisting of tin, silicon, and zinc in said solid
5 solution or inter-metallic compound is tin.

1 11. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said at least one element selected from the group
3 consisting of tin, silicon, and zinc in said central portion is silicon, and said at least
4 one element selected from the group consisting of tin, silicon, and zinc in said
5 solid solution or inter-metallic compound is silicon.

1 12. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said at least one element selected from the group
3 consisting of tin, silicon, and zinc in said central portion is zinc, and said at least
4 one element selected from the group consisting of tin, silicon, and zinc in said
5 solid solution or inter-metallic compound is zinc.

1 13. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 1 or claim 2, wherein said additional element is selected from the group
3 consisting of Mg, Fe, Mo, Zn, Cd, In, Pb, Co, Ni, Al, Sn, Cu, V, and Ge.

1 14. (Newly Added) A non-aqueous electrolyte secondary battery
2 comprising:

3 a positive electrode,

4 a negative electrode capable of intercalating and de-intercalating lithium,

5 a non-aqueous electrolyte solution; and

6 a solid electrolyte,

7 wherein:

8 said negative electrode comprises a plurality of composite particles,

9 each of said composite particles comprises a central portion comprising
10 silicon, and a coating at least partially around said central portion,

11 said coating comprises a solid solution or an inter-metallic compound, and

12 said solid solution or inter-metallic compound comprises: a) silicon, and b)
13 at least one additional element, said additional element selected from the group
14 consisting of group 2 elements, transition elements, group 12 elements, group 13
15 elements, and group 14 elements exclusive of carbon and silicon; and

16 said solid electrolyte is a polymer gel electrolyte or a lithium ion conductive
17 glass solid electrolyte.

1 15. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14, wherein said positive electrode comprises a lithium-containing
3 composite oxide and said polymer, and said negative electrode comprises said
4 composite particles and said polymer.

1 16. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14 or claim 15, wherein said additional element is selected from the group
3 consisting of Mg, Co, Ni, Zn, Al, and Sn

1 17. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14 or claim 15, wherein said polymer is a polymer or a copolymer

3 comprising at least one monomer selected from the group consisting of
4 acrylonitrile, vinylidene fluoride, hexafluoro-propylene, tetrafluoro-ethylene, and
5 perfluoro-alkyl vinyl ether.

1 18. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14 or claim 15, wherein said polymer is a polyester.

1 19. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14 or claim 15, wherein said polymer is a copolymer of a methacrylate and
3 an ethylene oxide.

1 20. (Newly Added) The non-aqueous electrolyte secondary battery of
2 claim 14 or claim 15, wherein said polymer gel electrolyte comprises at least one
3 structural reinforcement selected from the group consisting of hydrophobic treated
4 particulates, fiber fabrics of polyolefin polymers, and non-woven fabrics of
5 polyolefin polymers.